

REMARKS

By the present response, Applicants have amended claims 1, 8-13, 15, 16, 18-22, 26-29, canceled claims 2-7, and 30, and added claims 31-34. Applicants respectfully submit that the features of amended claim 1 are described at, for example, page 41, line 41 to page 43, line 3, with respect to figures 18-20. Applicants also note that amended claim 29 recites features somewhat similar to the above-noted features recited in amended claim 1.

Further, Applicants respectfully note with appreciation the Examiner's confirming their claim of priority and considering their Information Disclosure Statements.

In the above-noted Office Action, claims 1, 2, and claim 27 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1-7, 29, and 30 were rejected under 35 U.S.C. 103(a) over CHRISTIE (1995), in view of HELMS et al. (US 6,344,874) and WAKUI (JP 09-149315). Claims 8-24, 27, and 28 were rejected under 35 U.S.C. 103(a) over CHRISTIE (1995), in view of WAKUI and HELMS et al. Claims 25 and 26 were rejected under 35 U.S.C. 103(a) over CHRISTIE, in view of WAKUI, HELMS et al., and TAKEMURA (US 4,831,453).

In view of the herein-contained amendments and remarks, Applicants respectfully request reconsideration and withdrawal of each of the outstanding rejections, as well as an indication of the allowability of each of the claims now pending.

Regarding the rejection of claims 1 and 2 under 35 U.S.C. 112, Applicants have eliminated the terms "first light source" and "second light source" from claim 1 and replaced them by one "light source", and further have canceled claim 2. Accordingly, Applicants believe that the outstanding rejection of claims 1 and 2 under 35 U.S.C. §112,

second paragraph is now overcome by the above-mentioned amendments, and respectfully request reconsideration and withdrawal of the outstanding rejection of claim 1 and 2.

Further, in regard to claim 27, Applicants have amended the terms “when said transmitting light beam falls” to “when a pulse of said data transmitting light beam falls”. As it can be seen in Fig. 27, for example, the accumulating period T_{ul} starts when the pulse beam corresponding to the data pulse falls. Therefore, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claim 27 under 35 U.S.C. §112, second paragraph.

Applicants traverse the rejection of claims 1-7, 29, and 30 under 35 U.S.C. §103(a) over CHRISTIE, in view of HELMS et al. (US 6,344,874) and WAKUI (JP 09-149315).

Incidentally Applicants note that U.S. Patent No. 6,023,292 is based upon WAKUI JP 09-149315. A copy is attached for the Examiner’s convenience.

A three-dimensional image capturing device as recited in claim 1 comprises “a light source that radiates a light beam, an image device that accumulates signal charge corresponding to a quantity of light received on the image device, a distance information sensing processor that controls radiating of a distance measuring light beam from the light source to a measurement subject and detects distance information which relates to the measurement subject by receiving a reflected light beam from the measurement subject; and a data transmitting processor that controls radiating of a data transmitting light beam from the light source, so that data is transmitted to an external device. According to the present invention “the light source outputs the distance measuring light beam and the data transmitting light beam in a single operation.” In other words, as

recited in the combination of claim 1, the light source radiates both the distance measuring light beam and the data transmitting light beam in a single operation.

CHRISTIE (1995) discloses the principle of three-dimensional image capturing method, and as the Examiner suggested, it discloses “a light source”, “an image device”, and “a distance information sensing processor”. However, CHRISTIE lacks any disclosure or suggestion of a “a data transmitting processor that controls radiating of a data transmitting light beam from the light source, so that data is transmitted to an external device” and “wherein the light source outputs the distance measuring light beam and the data transmitting light beam in a single operation”, as required by the recitations of claim 1.

HELMS et al. disclose a camera that transmits light beams for illuminating an object, so that the image capturing and the data transmitting are carried out simultaneously. However, HELMS et al. lacks any disclosure or suggestion of the distance measuring light beam and the other recited features relating to the distance measurement, such as the distance information sensing processor.

WAKUI discloses a camera having a light source that emits light beams for triangulation distance measuring as well as light beams to transmit data. However, the distance measuring light beam and the data transmitting light beam disclosed in WAKUI are separately emitted in a “recording mode” and in a “transmitting mode” respectively, and not in a single operation (see paragraphs 30 and 35 of the translation).

In other words HELMS et al. deals with emission (i.e., radiating) of image illumination light rather than distance measuring light. WAKUI emits two separate light beams in different operational modes of the camera. Finally, CHRISTIE merely discloses distance measurement light beams without any data transmission. The only

basis for combining these diverse teaching in the manner proposed by the Examiner is by utilizing Applicants' disclosure as a guide. This is not appropriate under 35 U.S.C. 103.

Accordingly, Applicants respectfully submit that the above-noted rejection of the outstanding Official Action is in error, since none of the references applied in the outstanding Official Action, in any proper combination disclose the above-noted feature "said light source outputs the distance measuring light beam and a data transmitting light beam in a single operation" in the claimed combination. To obtain at least this feature of the present invention, one has to combine the triangulation distance measurement of WAKUI with CHRISTIE's three-dimensional image capturing principle. There is no teaching for this combination.

Further, one also has to modify the teachings of illumination light beam for an imaging operation in HELMS to the distance measuring light beam in WAKUI and to further combine this modification with the three-dimensional image capturing of CHRISTIE. However, there is no suggestion or motivation to combine these three references in the manner proposed.

In this regard, Applicants respectfully submit that the prior art, either separately or in any proper combination, does not disclose or suggest the above-noted feature "said light source outputs the distance measuring light beam and a data transmitting light beam in a single operation" in the claimed combination, as is recited in claims 1 and 29.

Accordingly, Applicants also respectfully request reconsideration and withdrawal of the outstanding rejection of claims 8-24, 27, and 28 under 35 U.S.C. §103(a) over CHRISTIE, in view of WAKUI and HELMS et al. (US 6,344,874). Each of claims 8-24, 27, and 28 are allowable, at least because each depends, directly or indirectly, from

an allowable independent claim, as well as based upon their own recitations.

Additionally, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claim 25 and 26 under 35 U.S.C. §103(a) over CHRISTIE, in view of WAKUI, HELMS et al., and TAKEMURA (US 4,831,453). Claims 25 and 26 are allowable, at least because each depends, directly or indirectly, from an allowable independent claim, as well as based upon their own recitations.

Applicants have also added new independent claims 31 and 34, and dependent claims 32 and 33 which depend from claim 31. Claim 31 recites a combination including a feature of “a distance information sensing processor” that radiates “a series of distance measuring light beams” and also recites a feature of “wherein said light source outputs a series of data transmitting light beams while radiating said series of distance measuring light beams”, which are not disclosed in the prior art. These features are described at, for example, page 41, line 41 to page 43, line 3, with respect to Figures 18-20.

Claim 34 recites a combination including a feature of “a distance information sensing processor that controls radiating of light beams from said light source” and a feature of “wherein said light beams comprise data transmitting light beams and an accumulation of said signal charge is carried out synchronously with output of said data transmitting light beam from said light source”, which are not disclosed in the prior art. Further, these features are described, for example, at pages 50-55 with respect to Figures 26 and 27.

Applicants respectfully submit that none of the reference applied by the Examiner and the prior art of record do not disclose or suggest the features of “said light source outputs the distance measuring light beam and a data transmitting light beam in a single

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operation”, “said light source outputs a series of data transmitting light beams while radiating said series of distance measuring light beams”, or “said light beams comprise data transmitting light beams and an accumulation of said signal charge is synchronously carried out in accordance with output of said data transmitting light beam from said light source” in the respective claimed combinations.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections of claims 1-30, entry and consideration of claims 31-34, and an indication of the allowability of all the claims now pending, in due course.

SUMMARY AND CONCLUSION

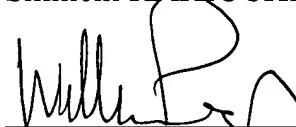
Applicants have made a sincere effort to place the present application in condition for allowance and believes that they have now done so. Applicants have discussed the features recited in Applicant s' claims and have shown how these features are not taught, disclosed nor rendered obvious by the references applied by the Examiner. Accordingly, Applicants have provided a clear evident, any basis for the patentability of all the claims pending herein.

Any amendments to existing claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed number.

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